

# W5YI

Nation's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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Vol. 15, Issue #20

\$1.50

PUBLISHED TWICE A MONTH

October 15, 1993

## AMATEUR RADIO HEADS BACK INTO SPACE!

The STS-58 flight of the Space Shuttle Columbia represents the next mission carrying the *Shuttle Amateur Radio Experiment* (SAREX).

STS-58 is scheduled for launch on 14-OCT-93 at 14:53 UTC. Spacelab Life Sciences-2 is the primary payload on-board STS-58. During the 14 day (extended duration) flight, the astronauts will conduct around-the-clock experiments on themselves and on living organisms carried in the spacelab module. The mission will be flown at an altitude of 153 nautical miles and at an inclination of 39 degrees to the Equator and concludes with a landing at Edwards Air Force Base, Calif.

The SAREX operations on this flight include voice and packet. Discussions between the astronauts and the SAREX working group indicates that there will be more general contact operations on this flight than was performed on each of the three SAREX flight flown earlier this year. Students in the United States and France will have a chance to speak via amateur radio with astronauts aboard the Space Shuttle Columbia during STS-58. Ground-based amateur radio operators ("hams") will be able to contact the Shuttle through automated computer-to-computer amateur (packet) radio link. There also will be voice contacts with the general ham community as time permits.

Shuttle Pilot **Richard A. Searfoss**, (amateur license pending), Mission Specialist **William S. McArthur, Jr. (KC5ACR)** and Payload Specialist **Martin J. Fettman (KC5AXA)** will talk with stu-

dents in 16 schools in the United States and in France using Amateur Radio. All three ham astronauts are making their first spaceflight.

Dick Searfoss, 37, Lt. Col., USAF, considers Portsmouth, N.H., his hometown. Searfoss, a USAF Academy graduate, has logged over 2,500 hours flying time in 54 different types of aircraft. Bill McArthur, Jr., 42, Lt. Col., USA, (Wakulla, N.C.) is a West Point (U.S. Military Academy) graduate with over 2,700 flight hours in 36 different aircraft. Marty Fettman, D.V.M., Ph.D., 36, is from Brooklyn, N.Y.

### STS-58 - SAREX Information:

**Mission:** STS-58 Space Shuttle Columbia  
Spacelab Life Sciences-2 (SLS-2)  
**Launch:** October 14, 1993, 14:53 UTC  
**Orbit:** 39 degrees orbital inclination  
**Length:** 14 days (Nominal)  
**Operators:** Bill McArthur (KC5ACR), Marty Fettman (KC5AXA), Rick Searfoss, Callsign TBD (to be designated.)  
**Modes:** FM Voice - Prime callsign KC5ACR  
Packet Radio - Callsign W5RRR-1  
**Frequencies:** All operations in split mode.  
**IMPORTANT!** Do not transmit on the downlink frequency.  
**Voice Freqs:** Downlink: 145.55 MHz (Worldwide)  
Uplinks: (Except Europe) 144.91, 144.93, 144.95, 144.97, 144.99 MHz  
(Europe) 144.70, 144.75, 144.80.

THE W5YI REPORT [Pub. No. 009-311] is published twice monthly by The W5YI Group, 2000 E. Randol Mill Rd, #608A, Arlington, TX. 76011  
**SUBSCRIPTION RATE:** (U.S., Canada and Mexico) One Year (24 issues) \$24.50 · Two Years: \$45.00 · Three Years: \$64.00. Tel. 817/461-6443  
Foreign Subscriptions via Air Mail: \$39.50 per year. (Payment may be made by Check, Money Order, VISA or MasterCard payable in U.S. funds.)  
Second Class Postage paid at Arlington, TX. **POSTMASTER:** Send address changes to THE W5YI REPORT, P.O. Box 565101, Dallas, TX. 75356



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**Note:** The crew will not favor any specific uplink frequency, so your ability to work the crew will be the "luck of the draw."

**Packet Freqs:** Downlink: 145.55 MHz  
Uplink: 144.49 MHz

## Information during mission:

**Goddard Amateur Radio Club, WA3NAN**, Greenbelt, Maryland, SAREX Bulletins and (around the clock) Shuttle-to-Ground Audio Retransmissions 3.860 MHz, 7.185 MHz, 14.295 MHz, 21.395 MHz, 28.650 MHz and 147.450 MHz (FM).

**Johnson Space Center ARC, W5RRR**, Houston, Texas, SAREX Bulletins 7.225 MHz, 14.280 MHz, 21.395 MHz, 28.650 MHz, (SSB) and 146.64 MHz (FM)

**ARRL Amateur Radio Station, W1AW**, Newington, CT, SAREX News Bulletins 3.990, 7.290, 14.290, 18.160, 21.390, and 28.590 MHz. (147.555 MHz FM)

**NASA Select television** is available on Satcom F-2R, Transponder 13, located at 72 degrees west longitude; frequency 3960.0 MHz, audio 6.8 MHz.

Also, bulletins available on **Internet**, via **AMSAT Amateur News Service**, **Compuserve**, and your Local PBSS.

**School Participation:** 16 school groups will participate in SAREX with pre-scheduled direct and tele-bridge contacts. These include 15 in the U.S., and one France. Students in the following schools will have the opportunity to talk directly with orbiting astronauts for approximately 4 to 8 minutes:

- **Russellville H.S.**, Russellville, Ariz. (K5PXP)
- **Lloyd Ferguson Elementary**, League City, Texas (KB5UFJ)
- **Eastern Heights Jr. H.S.**, Elyria, Ohio (N8AM)
- **Bloomfield Elementary**, Bloomfield, Mo. (N0UOP)
- **Carl Hayden Community H.S.**, Phoenix, Ariz. (N7UJJ)
- **Sycamore Middle School**, Pleasant View, Tenn. (AC9R)
- **Alamo Heights Junior School**, San Antonio, Texas (WA5FRF)
- **Nashua H. S.**, Nashua, N.H. (N1NHS)
- **Meyzeek Middle School**, Louisville, Ky. (N4OKX)
- **Webber Junior H.S.**, Fort Collins, Colo. (N0LHW)
- **Red Springs H.S.**, Red Springs, N.C. (W4MZP)
- **Ernest Elliott School**, Munster, Ind. (AJ9N)
- **Space Center Intermediate School**, Houston, Texas (KA5GLX)
- **St. Barnabas Episcopal School**, Houston, Texas (N5NYD)
- **Gardens Elementary School**, Pasadena, Texas (N5VSP)
- **Lycee Gaston Febus**, Pau, France (FE1OBV)

The radio contacts are part of the SAREX project, a joint effort by NASA, the American Radio Relay League (ARRL), and the Amateur Radio Satellite Corp. (AMSAT). The project, which has flown on 10 previous Shuttle missions, is designed to encourage public participation in the space program and support the conduct of educational initiatives through a program to demonstrate the effectiveness of communications between the Shuttle and low-cost ground stations using amateur radio voice and digital techniques.

Following the STS-58 mission, Columbia will be returned to Kennedy Space Center, Fla., where the spacelab payload will be removed. Work then will begin to prepare Columbia for its next flight, STS-62, scheduled to fly in February 1994.

## RADIO AMATEUR PAYLOADS FLY ON ARIANE

*New "crop" of OSCAR satellites on orbit!*

With the launch window closing, an ARIANE launch vehicle lifted off September 26th from the Kourou, French Guiana spaceport carrying seven satellites to orbit. The 59th rocket of the European consortium Arianespace blasted off from its jungle launch pad at 01:45 UTC. Among those seven satellites were a cluster of new Amateur Radio OSCAR communications satellites. After some consultation with AMSAT-NA, AMSAT-UK, SSTL and the other microsat owners, an agreement on the satellite numbering was reached and is as follows:

- OSCAR-24 will be skipped awaiting the final decision from ARSENE. It was agreed that Arsene is AO-24 but of course the request and final decision must come from RACE, the French Amateur Radio organization). The ARSENE satellite is no longer responding to telecommands sent by FF1STA station at ENSAE School in Toulouse, France.

Numerous commands have been sent to try to reactivate the satellite without success. It has been more than a month since the last ARSENE signals were heard in Mode-S and FF1STA has not received any more telemetry from the satellite. There will be one last effort to recover ARSENE using the FC1ELL EME station in Argenteuil, France near Paris with an 8M dish and a high power UHF transmitter.

- The first Amateur microsat from V-59 to be separated was Kitsat-B. It will become Kitsat Oscar 25 (KO-25). KITSAT-B is a 50 kg satellite built by the Korean Advanced Institute of Space Technology (KAIST). Its mission is to take CCD pictures, process numerical information, measure radiation, and receive and forward messages.



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## KITSAT-B (KO-25)

Uplink: 145.870/145.980 MHz  
Downlink: 435.175/436.500 MHz  
Speed: 9600 baud

- Itamsat and Eyesat were separated at the same time and since the Itamsat project started some two years before Eyesat, Itamsat becomes ITAMSAT Oscar 26 (IO-26) and Eyesat becomes AMRAD Eyesat Oscar 27 (AO-27).

ITAMSAT is a 12 kg satellite built by AMSAT-ITALY. Its mission is to store and forward Amateur Radio messages like AO-16, LU-19, KO-22, and KO-23. Its transponder frequencies are as follows:

## ITAMSAT-OSCAR-26 (IO-26)

Uplink: 145.875/145.900/145.925 & 145.950 MHz  
Downlink: 435.867 MHz (Primary)  
435.822 MHz (Secondary)  
Speed: PSK 1200/9600 baud

- AO-27 is a secondary amateur communications payload carried aboard the EYESAT-1 12.5 KG commercial MICROSAT satellite built by Interferometrics Inc. of Vienna, Virginia. The amateur equipment aboard the satellite was constructed by members of AMRAD, a technically-oriented, non-profit organization of radio amateurs based in the Virginia suburbs of Washington, D.C., to meet the needs of amateurs for a platform to conduct digital satellite communications experiments.

## AMRAD-OSCAR-27 (AO-27)

Uplink: 145.850 MHz  
Downlink: 436.800 MHz  
Speed: 300 - 9600 baud

- It is not yet clear if PoSat will join the Amateur satellite family. If the decision is positive (and we all will be pleased to have this sophisticated bird on our side) it will be PoSat Oscar 28 (PO-28). The Portuguese builders of POSAT are determining whether or not they will activate the amateur package on that otherwise commercial satellite.

POSAT-1 is a 50 kg satellite built by Surrey Satellite Technology Limited (SSTL) of the University of Surrey, for LNETI (Portugal). Its mission is to receive and transmit earth images, determine its position using GPS, make radiation measurements, and receive and forward messages.

## POSAT-OSCAR-28 (PO-28?)

Uplink: 145.925/145.975 MHz  
Downlink: 435.250 MHz (Primary)  
435.275 MHz (Secondary)  
Speed: 9600 bps (38.4Kbps probably)

## AMSAT-NA 1993 SPACE SYMPOSIUM

The AMSAT-NA Annual Meeting and Space Symposium '93 was held October 7 through 10, 1993, at the LaQuinta Inn in Arlington, Texas. The speakers list was full with some 30 Amateurs presenting programs. Some of the forums and papers presented: **Rosalie White, WA1STO**; ARRL/AMSAT Educational Workshop

**Kent Britain, WA5VJB**; "Using Metal Booms to Support AMSAT Antennas"

**Dennis Wingo, KD4ETA**; "Status of SEDSAT-1"

**David Liberman, XE1TU**; "UNAMSAT-Experimental Module - TSFR"

**Alberto Zagni, I2KBD**; "IT-AMSAT-1 Status"

**Jeff Wallach, N5ITU**; "High Resolution Weather Satellites"

**Dan Schultz, N8FGV**; "Hubble Space Telescope Service Mission Preview"

**Lou McFadin, W5DID**; "SAREX Shuttle Mission Operations - From a Payload's Point of View"

**Bill Tynan, W3XO**; The 1993 Space Symposium and AMSAT Annual Meeting

**Dick Jansson, WD4FAB**; "The AMSAT Phase 3D Spacecraft"

**Peter Guelzow, DB2OS**; "AMSAT Phase 3D Electronics"

**Stan Wood, WA4NFY**; AMSAT Phase 3D Antenna Design"

**Tom Clark, W3IWI**; "How GPS Receivers Work"

**Frank Bauer, KA3HDO**; "The Shuttle Amateur Radio Experiment - Current Status and Future Visions"

**James Miller, G3RUH**; "Managing OSCAR-13"

**Ed Krome, KA9LNV**; "Development of a Portable Mode-S Ground Station"

**Jim White, WD0E**; "DOVE Progress Report and Future Operation"

**Bob Argyyle, KB7KCL**; "Some 20-20 Hindsight: A slightly Different View of WEBERSAT"

**Tom Clark, W3IWI**; "AMSAT Phase 3D GPS and Master Oscillator Package"

**Bob Stricklin, N5BRG**; "DSP-93: The Joint TAPR/ARRL DSP Program"

**Darrel Emerson, AA7FV**; "Digital Processing of Weak Signals Buried in Noise"

**Keith Pugh, W5IU**; "AMSAT-NA Operations Report - 1993"

**Gustavo Carpignano, LW2DTZ**; "VOXSAT - VOice eXperiment SATellite"

**Gould Smith, WA4SXM**; "Tools for Digital Satellites - The Downlink"

**John Hansen, WA0PTV**; "Implementing the PACSAT Broadcast Protocol on Terrestrial Networks"

**Ed Krome, KA9LNV**; S-Band for the Beginner"

**Eric Rosenberg, WD3Q**; "Non-Messaging Uses of the Store-and-Forward Satellites"

**Eric Cottrell, WB1HBU**; "Microsat Ground Stations"

**Borje Rautio, SM2UHI**; "Birth of a Satellite Education Program in Sweden"

There was also a very entertaining Saturday night banquet and program ...complete with Recognition Award Ceremony and prize drawings.



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## JULY VE PROGRAM STATISTICS

<u>July</u> <u>No. VEC's</u>	<u>1991</u> <u>18</u>	<u>1992</u> <u>18</u>	<u>1993</u> <u>18</u>
<b>Testing Sessions</b>	<b>711</b>	<b>847</b>	<b>924</b>
<u>VEC</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
ARRL	37.7%	48.9%	48.4%
W5YI	44.0	39.8	40.5
CAVEC	5.3	2.6	2.2
WCARS	1.8	1.9	2.1
GtLakes	3.9	0.2	1.0
SunnyV	1.3	1.7	0.9
Others (12)	6.0	4.9	4.9
<b>Year-to-Date Sessions</b>	<b>4427</b>	<b>5957</b>	<b>6425</b>
<b>Elements Administ.</b>	<b>13754</b>	<b>13533</b>	<b>14484</b>
<u>VEC</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
ARRL	43.8%	52.3%	53.9%
W5YI	36.7	32.8	32.7
CAVEC	6.0	3.2	3.2
WCARS	1.4	1.3	1.8
SunnyV	2.7	2.4	1.7
GtLakes	3.3	0.4	1.2
Others (12)	6.1	7.6	5.5
<b>Year-to-Date Elements</b>	<b>97599</b>	<b>122043</b>	<b>120740</b>
<b>Applicants Tested</b>	<b>8392</b>	<b>8351</b>	<b>8706</b>
<u>VEC</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
ARRL	44.5%	52.2%	53.2%
W5YI	36.8	33.2	33.9
CAVEC	4.9	3.1	3.1
WCARS	1.5	2.1	1.7
SunnyV	2.7	2.2	1.5
GtLakes	3.5	0.3	1.1
Others (12)	6.1	6.9	5.5
<b>Year-to-Date Tested</b>	<b>58671</b>	<b>73034</b>	<b>70984</b>
<u>July</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
Pass Rate - All	66.6%	65.2%	64.6%
Applicants/Session	11.8	9.9	9.4
Elements/Applicant	1.6	1.6	1.7
Sessions Per VEC	39.5	47.1	51.3

### Administrative Errors by VE's/VEC's

<u>July</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
Defect. Applications	0.5%	0.3%	0.0%
Late Filed Sessions	1.8%	1.7%	3.9%
Defective Reports	0.8%	0.0%	0.0%

**Note:** The two largest VEC's, (ARRL and W5YI) accounted for 88.9% of all July 1993 test sessions, 86.6% of the exam elements and 87.1% of the applicants.

[Source: Personal Radio Branch/FCC; Washington, D.C.]

## AUGUST AMATEUR LICENSING STATISTICS

<u>August</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	
<b>New Amateurs:</b>					
New Novices	893	872	463	446	
New Tech's	<u>158</u>	<u>3180</u>	<u>2495</u>	<u>3296</u>	
<b>Total New:</b>	<b>1089</b>	<b>4121</b>	<b>3003</b>	<b>3787</b>	
<b><u>Upgrading:</u></b>					
Novices	1209	1445	693	605	
Technicians	503	*905	*642	*625	
Generals	334	520	398	447	
Advanced	<u>232</u>	<u>406</u>	<u>275</u>	<u>273</u>	
<b>Total:</b>	<b>2278</b>	<b>3276</b>	<b>2008</b>	<b>1950</b>	
<b><u>Renewals:</u></b>					
Total Renew:	40	52	51	247	
Novices	10	2	7	19	
<b><u>Purged:</u></b>					
Total Dropped:	1507	15	5	14	
Novices	15	1	0	1	
<b><u>Census:</u></b>					
<b>Indiv. Oper.</b>	<b>491670</b>	<b>529680</b>	<b>578111</b>	<b>620599</b>	
Change/Year	+28498	+38018	+48431	+42488	
<b><u>Individual Operators by Class:</u></b> (and % of total)					
<b><u>Extra</u></b>	<b><u>Advan.</u></b>	<b><u>General</u></b>	<b><u>Technic.</u></b>	<b><u>Novice</u></b>	<b><u>Total:</u></b>
<b><u>August 1990</u></b>					
52700	104222	119038	124778	90932	<b>491670</b>
10.7%	21.2%	24.2%	25.4%	18.5%	100.0%
<b><u>August 1991</u></b>					
56242	106990	121832	148229	96387	<b>529680</b>
10.8%	20.9%	23.8%	25.7%	18.8%	100.0%
<b><u>August 1992</u></b>					
60405	109404	124559	185209	98534	<b>578111</b>
10.5%	18.8%	21.6%	32.0%	17.0%	100.0%
<b><u>August 1993</u></b>					
63977	111890	126666	217049	101017	<b>620599</b>
10.3%	18.0%	20.4%	35.0%	16.3%	100.0%
Club/					
RACES &	<b><u>(1990)</u></b>	<b><u>(1991)</u></b>	<b><u>(1992)</u></b>	<b><u>(1993)</u></b>	
Military:	<u>2444</u>	<u>2431</u>	<u>2471</u>	<u>2430</u>	
<b>Total Active:</b>	<b>494114</b>	<b>532111</b>	<b>580542</b>	<b>623029</b>	
% Increase	+6.1%	+7.7%	+9.1%	+7.3%	

(\* = Does not include Technicians upgrading to Tech Plus)

### AMATEURS BY CALL SIGN GROUP:

Group	Extra	Advan.	General	Technic.	Novice	Total
A	36096	682	249	7	0	37034
B	4213	29625	54	6	1	33899
C	14695	44450	67652	95397	47	222241
D	8727	37017	58604	121578	100967	326893
Other	246	116	107	61	2	532
<b>Total</b>	<b>63977</b>	<b>111890</b>	<b>126666</b>	<b>217049</b>	<b>101017</b>	<b>620599</b>

[Group "A"=2X1 & 2X2; "B"=2X2; "C"=1X3 "D"=2X3 format.]

[Source: FCC Licensing Facility, Gettysburg, PA]



## The Foundation For Amateur Radio Scholarships

has announced their 1993 winners. They are:

(\$2000) Diane R. Magen, KG5CS, Grand Forks, ND;

(\$1200) Diane M. Weldon, KA1NOJ, Marlborough, MA;

(\$1000) Brian D. Kuebert, N4UEZ, Warrenton, VA; Bernard P. Andreoli, WM3L, Old Forge, PA; G. Colin Pitts, N3KHC, Annapolis, MD; Rodney T. Frank, KA3OZF, Largo, MD; Joseph P. Nunemaker, N3KHP, Lanham, MD; Elisa Niemtzow, KA6WWY, Gaithersburg, MD; Edward J. Calhoun, N3GJI, ASrnoId, MD; Melissa L. Benish, N3FAX, Pittston, PA; Tony Drake, KC4OBY, Bradenton, FL; Andrew Glasbrenner, KO4MA, Jacksonville, FL; Michelle L. Czaikowski, N4QHT, Stephens City, VA; Wayne E. Wisner, KA3YEE, Frederick MD; Timothy J. Czerwonka, WO9U, Chetek, WI; Robert J. Goemans, N9HAD, Madison, WI; Karen M. Schneider, N9SVA, Appleton, WI; Jennifer Doerrie, KA5WMJ, Booker, TX; Charles A. Keller, KI5YO, Kingwood, TX;

(\$800) Shawn E. Allen, KB8IYA, Stumptown, WV; Dori M. Baker, AA8IT, Lynchburg, VA; Jeffrey Giesburg, KB2CZB, Dumont, NJ; Craig A. Gullickson, KC6CEX, Fresno, CA; Beverlie L. Hartnett, N3NZK, Duncanville, PA; Charles A. Hill, KA3RWC, Seneca, PA; Matthew T. Johnson, N5OKP, Midland, TX; Steven D. Kraft, KE9RW, Menomnie, WI; Richard E. Kutter, KB8LOE, New Madison, OH; Kenneth R. Leitch, KB5OKI, El Paso, TX; David B. Perrin, KC1TS, Contoocook, NH; Elizabeth Skolaut, KA0YSP, Great Bend, KS; Patrick J. Tobin, KA0ZEQ, E. Grand Forks, MN; Taras B. Zima, UB5LSL/KD6VWQ, Greenville, CA;

(\$750) Niesha S. King, N6SFS, Palm Desert, CA; Dean R. Madsen, KE0WO, Storm Lake, IA;

(\$500) Michael Ambrose, KC1UK, Monroe, CT; Keith J. Leitch, KB5JVM, El Paso, TX; Grant Kesselring, N0ICI, Ottumwa, IA; Guy Shechter, N5URI, Houston, TX; Daniel M. Reynolds, N0LAI, Hibbing, MN; Erin M. Cottrell, N9SVH, Appleton, WI; Jeremy L. Haley, WG9T, Mendota, IL; Jonathan H. Kolbrak, N9KBB, Chippewa Falls, WI; Michael P. Ley, N9GQU, Menomonie, WI; Peter S. Wycoff, KA3WCA, Washington Crossing, NJ; Kresta L. French, N3NMG, Smithfield, PA; Eric Chapman, KO4BS, Virginia Beach, VA; Christopher Schaab, KD4NFW, Virginia Beach, VA

(The Foundation for Amateur Radio, Inc., Washington, DC.;

Hugh A. Turnbull, W3ABC, Chairman, Scholarship Committee.)

## ARE AMATEURS UPGRADING TO "MAINSTREAM"?

We were recently asked twice (once by a subscriber and again by a ham radio dealer) about the impact of the No-Code Technician on Amateurs upgrading past the no-code level.

The reader said he realized the No-Code Technician ticket was bringing in record numbers of newcomers to ham radio, but were they eventually upgrading to what he called "mainstream ham radio." While we question whether telegraphy knowledge "mainstreams" a code-less Tech to ham radio, it was an interesting question.

The dealer had a different motive. He wanted to know how dropping the code for beginners would effect his sales of HF transceivers in the future. Operation below 30 MHz, of course, requires the control operator to be Morse code proficient.

What we did, was look into to FCC's licensing records for the three years before and after "No-Code." The first Codeless Technician license was issued on March 12, 1991.

The survey was further complicated by the fact that we have two entry levels as of February 14, 1991. The Technician of "before No-Code" had to pass 5 wpm. After 1991, however, the beginner did not.

It is the General Class and higher class operator, however, that usually buys HF transceivers. And all Technician Class operators (whether before or after the arrival of the code-free Tech) must pass a 13 wpm code exam to upgrade.

Our research reveals that an average of 1,070 Technicians upgraded to the General (and higher) Class monthly during the three years prior to "No-Code." Interestingly, in the 3 years (actually it has only been 29 months) after the beginning of Code-free hamming, the number of Technicians upgrading to General (and higher) is an average of 1,336 monthly - an increase of 25%.

It thus appears that the No-Code Technician Class has actually helped increase the number of telegraphy proficient amateurs. The reason is probably that there is simply a larger pool of radio-oriented people entering ham radio. The exposure to the hobby and to other "mainstream" operators seems to have motivated newcomers to upgrade further "up the ladder." Actually the same thing happened when Citizen's Band radio was fashionable in the early and mid-1970's. The popularity of two-way radio communications prompted many CB operators to become licensed ham operators.

There can be no doubt, however, that the biggest impact of "No-Code" is on the Technician Class itself. The following chart shows the annual percent growth for the five years prior to "No-Code" - and for the period (on annual basis) after April 1, 1991. The Technician Class was already the fastest growing class before 1991 with an average annual gain of nearly 12%. It mushroomed to 25% once the 5 wpm code test was abolished for the new entry level Technician.

## ANNUAL AMATEUR SERVICE GROWTH

### Before No Code Technician

Date:	Extra	Adv.	Gen.	Tech	Nov	Total
Apr 1986	39405	98237	116947	85022	79306	418917
Apr 1987	41634	97504	114943	86118	82734	422933
Apr 1988	44819	98403	113623	95810	82780	435435
Apr 1989	48049	100183	114975	106341	83371	452219
Apr 1990	49169	99702	114406	113214	81878	457369
Apr 1991	54887	106075	120800	134655	96501	512918

### 1986 - 1991 Annual Percent Growth

Growth	+7.9%	+1.6%	+0.7%	+11.7%	+4.3%	+4.5%
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### After No Code Technician

Date:	Extra	Adv.	Gen.	Tech	Nov	Total
Apr 1991	54887	106075	120800	134655	96501	512918
Apr 1992	58913	108575	123543	171803	98363	561157
Apr 1993	62669	110825	126168	203873	100182	603717
Sep 1993	63977	111890	126666	217049	101017	620599

### 1991 - 1993 Annual Percent Growth

Growth	+ 6.9%	.2.3%	+ 2.0%	+ 25.3%	+1.9%	+8.7%
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## ARE AMATEURS UPGRADING TO "MAINSTREAM?"

The effect of the No-Code Technician License on Upgrading to General, Advanced and Extra Class

### UPGRADES BEFORE NO CODE TECHNICIAN

1988-1989	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	1218	1885	1300	1307	1260	1075	953	1045	711	1373	1134	921	14182
TECHNIC. <sup>2</sup>	389	573	400	408	389	396	356	409	248	428	332	353	4681
GENERAL <sup>3</sup>	317	492	312	330	304	343	307	338	201	320	274	291	3829
ADVANCED <sup>4</sup>	247	376	247	282	250	244	257	285	117	209	197	173	2884
TOTAL <sup>5</sup>	2171	3326	2259	2327	2203	2058	1873	2077	1277	2330	1937	1738	25576

• Average number of Technician and higher class amateurs upgrading: 950 month

1989-1990	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	1537	2068	1361	1734	1190	1171	1454	868	1168	1190	1143	1382	16266
TECHNIC. <sup>2</sup>	508	661	395	520	391	416	533	310	493	477	440	513	5657
GENERAL <sup>3</sup>	409	481	279	349	272	314	352	244	338	338	320	393	4089
ADVANCED <sup>4</sup>	254	356	200	276	182	233	288	151	230	220	230	229	2849
TOTAL <sup>5</sup>	2708	3566	2235	2879	2035	2134	2627	1573	2229	2225	2133	2517	28861

• Average number of Technician and higher class amateurs upgrading: 1050 month

1990-1991	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	1289	2249	1690	2164	1209	611	1456	1016	1326	512	2060	1157	16739
TECHNIC. <sup>2</sup>	598	791	514	636	503	284	810	633	622	243	670	524	6828
GENERAL <sup>3</sup>	410	595	345	460	334	214	620	494	398	147	400	317	4734
ADVANCED <sup>4</sup>	249	322	266	311	232	119	325	264	285	92	275	218	2958
TOTAL <sup>5</sup>	2546	3957	2815	3571	2278	1228	3211	2407	2631	994	3405	2216	31259

• Average number of Technician and higher class amateurs upgrading: 1210 month

### UPGRADES AFTER NO CODE TECHNICIAN

1991-1992	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	1621	1419	1002	1670	1445	642	1073	491	614	921	888	898	12684
TECHNIC. <sup>2</sup>	772	642	420	764	905	443	893	404	512	637	635	798	7825
GENERAL <sup>3</sup>	500	414	275	463	520	286	527	241	362	417	417	468	4890
ADVANCED <sup>4</sup>	346	288	191	321	406	206	398	209	273	279	299	353	3569
TOTAL <sup>5</sup>	3239	2763	1888	3218	3276	1577	2891	1345	1761	2254	2239	2517	28968

• Average number of Technician and higher class amateurs upgrading: 1107 month

1992-1993	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	889	636	1569	836	693	562	312	216	524	630	513	838	8218
TECHNIC. <sup>2</sup>	749	507	1156	596	642	517	364	284	635	763	670	917	7800
GENERAL <sup>3</sup>	488	319	632	409	398	332	235	170	336	389	418	631	4757
ADVANCED <sup>4</sup>	315	227	492	309	275	241	139	122	305	259	268	393	3345
TOTAL <sup>5</sup>	2441	1689	3849	2150	2008	1652	1050	792	1800	2041	1869	2779	24120

• Average number of Technician and higher class amateurs upgrading: 1325 month

1993-1994	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
NOVICE <sup>1</sup>	472	676	834	254	605								2841
TECHNIC. <sup>2</sup>	523	797	822	286	625								3053
GENERAL <sup>3</sup>	335	597	610	189	447								2178
ADVANCED <sup>4</sup>	240	348	367	104	273								1332
TOTAL <sup>5</sup>	1570	2418	2633	833	1950								9404

• Average number of Technician and higher class amateurs upgrading: 1313 month (5 mos.)

- NOVICE<sup>1</sup> = Novice Class Licensees upgrading to Technician, General, Advanced or Amateur Extra Class  
 TECHNICIAN<sup>2</sup> = Technician Class Licensees upgrading to General, Advanced or Amateur Extra Class.  
 GENERAL<sup>3</sup> = General Class Licensees upgrading to the Advanced or Amateur Extra Class.  
 ADVANCED<sup>4</sup> = Advanced Class Licensees upgrading to Amateur Extra Class..  
 TOTAL<sup>5</sup> = Total of all amateurs upgrading their license class during a specified month.

Source: Federal Communications Commission, Gettysburg, PA



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• **The Amateur Radio News Service is once again conducting their annual publications contest.** The 1993 ARNS Publications Contest is aimed at recognizing superior performance in amateur radio journalism, and evaluating club newsletters complete with suggestions for improvement.

The contest is open to all amateur radio organizations. Membership in ARNS is not required. General circulation magazines and professional journals are not eligible to enter.

To enter the contest, each club should submit one copy of any issue of their club newsletter dated July, 1992 through December, 1993. The contest application (available from: **Lee Knirko, W9MOL, President ARNS, 11 S. LaSalle St., Suite #2100, Chicago, Illinois 60603**) must accompany the newsletter. The deadline for receipt of entries is December 1, 1993. Early submissions are appreciated to facilitate the work of the judges. The deadline date will not be extended.

The judges will evaluate the papers by awarding points based on the following criteria:

(A) **GENERAL FORMAT** (Title, date and frequency of issue shown; identification of organization; names, addresses, phone of editor and officers; club meeting dates, place and time; layout, spelling and grammar)

(B) **APPEARANCE** (Overall layout and balance, pictures, cartoons, and graphics; type consistent and attractive, article and type spacing; reproduction quality; cover sheet, first page, header, easy to handle, open and read.)

(C) **CONTENT** (Member contributions, editorials, club activity coverage; training and general amateur coverage; technical or operating articles; use of humor, puzzles, entertainment; serves special needs of members.)

Papers will be grouped based on total scores computed by the judges and will be awarded a certificate classifying the submission as SUPERIOR, EXCELLENT or GOOD. Along with the certificate, each club will receive copies of the judging sheets showing points awarded for each of the areas considered and each judge's summary critique of outstanding characteristics of their paper, with suggestions for improvement.

The ARNS BULLETIN will not publish scores, but will list entrants. The decisions of the judges are final.

• **CQ Magazine is raising their advertising rates** approximately 8% effective January 1994 - "...the first ad rate increase since July of 1990..." According to CQ, the Consumer Price Index over the same time span is approximately 14%.

• **ICOM America, Inc., is kicking off a Christmas coupon promotion!** A valuable coupon book will be mailed to each person who buys an Icom radio between October 1 and December 31, 1993. The warranty card receipt will cause a book of 32 "price off" coupons from leading manufacturers to be mailed. Among the leading suppliers participating are Icom America, ARRL/QST, AEA, Cornet, W5YI Group, Outbacker, AMSAT, Hustler, CQ Magazine, 73 Magazine ...and many others. Some of the discounted products include antennas, cables, publications, software, seminars, even ARRL membership.

• **Phase 3-D Engineering Model Construction Update.** The Phase 3-D satellite is slated for launch on one of the European Space Agency's ARIANE 5 boosters from Kourou, French Guiana sometime in 1996. It will be the largest, most sophisticated and most expensive Amateur Radio satellite ever built. The satellite's 16-hour orbit will make it visible from the Northern Hemisphere for about two-thirds of each day!

Dick Jansson, WD4FAB, AMSAT-NA Vice President for Engineering, reports that teams from AMSAT-DL and AMSAT-NA are well along in their efforts to construct an Engineering Model of the Phase 3-D satellite spaceframe in Germany.

During the past two months, AMSAT-DL President Dr. Karl Meinzer (DJ4ZC) along with Werner Haas (DJ5KQ), Konrad Mueller (DG7FDQ), Wilfried Gladish and workers Diana Cronau, Birget Rheil and Anuschka Geis joined forces with Dick and a team of Weber State University (WSU) students to tackle the project at the University of Marburg. The WSU team was led by Ralph Butler and Jaim Parsons. They and their students had also been constructing tooling templates as well as machining various structural parts for the proposed Model. Dick indicates that while some structural parts still remain to be completed on the Model, all the essential structural elements are now in place.

"It was a tremendous effort,"

Dick noted upon his return to the United States. He went on to say that, "We've now confirmed that our structural designs can be successfully manufactured into a lightweight flight space-frame."

During the Marburg effort, the team also took delivery of flight hardware for the Phase 3-D electronic module cases. These cases are constructed in kit form and contain fully interchangeable parts that will allow assembly of any one of five different versions of the design. The cases will ultimately house the vital electronic components of the Phase 3-D satellite. All of the module case work was done by WSU students.

In the course of the Model's construction, Dick reports the team racked up some rather impressive statistics. Together, they drilled over 9,900 holes and performed over 19,000 deburring (finishing) operations on the structure. The Equipment Panels, alone, had over 3,200 holes drilled in them. The high point of the project came when the internal Heat Pipes (a part of the Phase 3-D thermal balancing structure) were successfully mated with the surfaces of the interior Equipment Panels -- on the very first try! Dick likened this feat to someone "bowling six 300 games in a row." He confirmed that such success was a direct result of the professional approach employed by each member of the team.

Construction of the Engineering Model space frame marks a major milestone in the Phase 3-D development effort. It provides designers of the all-important electronic, propulsion and attitude control systems with a "hands on" platform to test the "fit-and-form" of their designs, many of which are also now nearing completion. It also gives the WSU students a massive "template" for building the actual flight model space-frame, a task that has now begun in earnest at WSU.

Phase 3-D will **UPLINK** on:

145.800-145.975 MHz	2m(200 kHz)
435.200-435.700 MHz	70cm - #A
436.000-436.500 MHz	70cm - #B
1268.500-1269 MHz	23cm - #A
1259-1269.500 MHz	23cm - #B
5.654 GHz	C-Band

**DOWNLINK** (TRANSMIT 250W PEP):

29.310/320/330/340/350 MHz	10
145.800-145.975 MHz	2m
435.300-435.700 MHz	70cm
2400.500-240-900 MHz	13cm
10.4510-10.45150 GHz	3cm



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## TECHNOLOGY UPDATE

■ **CD-ROM Electronic versions of magazines** are just around the corner! Time magazine will make its full text available to America Online subscribers. *[Advertising Age]*

■ **IBM has a new "800" mail-order number.** It is 1-800-IBM-CALL. They will even use it to sell large computers and give information - not just to market smaller PCs. IBM also has a brand new marketing team who are going full steam ahead after the higher profitable mail order and direct mail response business. A slimmer, reduced sales force IBM must now depend less on field reps servicing accounts. *[Advertising Age]*

■ The Washington Post has developed a prototype **electronic newspaper that could be transmitted through PCS** (the new digital wireless communication service.) By touching a picture or headline, a reader could receive additional information in any form: video, sound or conventional text. *[Broadcasting and Cable, Sep 27, 1993]*

■ **Anti-trust lawyer Reed Hundt, 45, the new FCC Chairman** nominated by President Clinton appears headed for a speedy Senate confirmation. The cable industry is already wary of Hundt because of his close personal ties to Al Gore, who recommended Hundt for the FCC job. During his years in Congress, Gore, too, was hostile to cable.

Bill and Hillary Clinton graduated a class ahead of Hundt at Yale Law School. Hundt will take a considerable pay cut when he moves into FCC headquarters. According to the financial disclosure, he earned about \$430,000 a year from his Latham & Watkins telecommunications law practice. An FCC Chairman earns \$123,100 a year. *[Broadcasting and Cable, Aug 30 & Sep 27, 1993]*

■ **Texas Instruments has a new silicon DMD chip, just a bit larger than 1/3-inch square**, that has more than 400,000 tiny imbedded mirrors. Each mirror is only 17 millionths of an inch on a side. The mirrors can be directed to reflect light (and images) onto a projection screen. The quality of the picture is said to be superior to that of cathode ray and liquid crystal displays.

The digital micromirror device (DMD) system provides excellent resolution, brightness, contrast and color fidelity. The tiny mirrors create a flicker-free picture and produce less visual noise, which shows up as static or picture dropouts, than do traditional TV monitors. A single chip can create a full NTSC TV picture. It may take as many as three to create a high definition television image. The mirrors on the chip, each corresponding to a single pixel of the picture, reflect light through a projection lens onto a 60-inch projection screen 12 feet away. *[Broadcasting and Cable, Aug 16, 1993]*

■ **Remember the lawsuit filed by a Florida cellular telephone user who said it caused his wife to die of brain cancer?** A circuit judge has thrown out the health hazards suit against the cellular phone manufacturer saying he lacks authority. "The Federal Communications Commission and Food and Drug Administration have primary jurisdiction over the issues raised in this case." *[Reuters News Service]*

■ **FCC to operate cost free? The Commission collects "Licensing Fees" on most of the applications it processes.** (Amateur Radio is exempt.) This raises about \$45 million a year. Add another \$82 million in new "User Fees" and the FCC will come close to covering its \$130 annual budget for fiscal 1994. It doesn't go to the FCC, however. At least, not yet. "If you take it out of the Treasury, you increase the deficit." *[Broadcasting and Cable, Aug 16, 1993]*

■ **We understand that the FCC will name an AM Stereo Standard** next week and that it will be Motorola's C-Quam system. We were also told that the new standard might be "circulated" rather than acted upon at a full Commission meeting.

■ **FM Digital Broadcasting may not see the light of day.** The biggest unknown is multipath interference. FM signals can reflect off many surfaces, causing severe interference. There is no test data on how a digital signal survives in such an environment. For AM stations, the biggest unknown is how well a multi-tower directional antenna system will transmit a digital signal. Broadcasters will not invest large sums of money unless it's a sure fire investment. *[Broadcasting and Cable, Sep 6, 1993]*

■ **The FCC may overhaul the emergency broadcast system (EBS) by the end of the year.** Two systems are being considered. (1) An in-band system which would use an audible tone, as does the current system and (2) an out-of-band system which would use an inaudible tone to activate warning devices.

Either way, the powerful new EBS would be able to turn on receivers and automatically tune them to emergency warnings, activate alarm devices built into familiar home equipment (such as smoke detectors) and target individual areas - and even individual persons - for messages. This way, people will only receive the alerts they need. The new EBS system will also be activated by cable operators. *[Broadcasting and Cable, Sep 20, 1993]*

■ **Computer Bulletin Boards are moving out of the basement and into the living room** as the technology emerges to send such services via the television rather than the personal computer. For-profit boards are forming rapidly, much like newsletters proliferated with the advent of desktop publishing.

The availability of low-priced high-speed modems, falling long distance rates and more capable basic computer hardware have fueled the information explosion.

More than 13.5 million people currently use bulletin board systems in the United States alone, with more than 10,000 people making their first call to a system every day! There are satellite alternatives, but those are either expensive or not yet interactive.

The potential of new wireless service in the 218 MHz *Interactive Video Distribution Service* (IVDS) band is revolutionary. Prodigy and CompuServe could use the bandwidth to expand their potential market from more than 2 million to 20 million subscribers within three years.

"IVDS will allow the great unwashed public who don't own a PC, much less a modem, to finally plug into the nationwide E-mail services, Internet and interactive game networks and data base services simply by turning on their living room television and pushing the remote control."

A new "On-Line Media Association" has been formed and an 11-member steering committee appointed. *[Electronic Media, Sept. 6, 1993]*



## MONETARY FORFEITURE SCHEDULE UPDATED

The FCC has released a new 1993 *Schedule of Monetary Forfeitures* for violations of its rules. These are the guidelines that the various Commission field offices use when determining fines for violations. In some cases they went down but they are still costly! The most expensive fines are \$20,000. It was the first revision since 1991.

But that doesn't mean the Commission can't issue bigger ones. They can ...and do! For example, the *Howard Stern Show* recently got hit with a \$500,000 fine for alleged indecency. The show has now been fined a record \$1.3 million over the last five years - none of which have ever been paid. The company that produces the show (Infinity Broadcasting) has chosen the appeals route which leads to federal court.

AT&T even got slammed with a whopping fine: \$464,000! They began providing enhanced services on a number of new public pay telephones without authorization. Most of the violations listed on the new FCC schedule are aimed at commercial users of the spectrum. These could apply to personal radio users.

Misuse of distress and safety frequencies	\$20,000
False distress communication	\$20,000
Failure to permit inspection	\$18,750
Malicious Interference	\$17,500
Transmission of indecent material	\$12,500
Exceeding power limits	\$10,000
Failure to respond to FCC communication	\$10,000
Using unauthorized frequency	\$10,000
Use of unauthorized equipment	\$5,000
Failure to ID station	\$1,250
Assorted minor violations	\$625

The new fine amounts are "base fines," subject to adjustment.

**Upward adjustments:** flagrant misconduct, 50-90%; ability to pay, 50-90%; intentional violation, 50-90%; substantial harm, 40-70%; prior violation, 40-70%; substantial economic gain, 20-50%; repeated or continuous violation, varies.

**Downward adjustments:** minor violation, 50-90%; good faith or voluntary disclosure, 30-90%; history of compliance, 20-50%; inability to pay, varies.

- About a dozen marketers of illegal CB radios and linear amplifiers were fined from \$5,600 to \$20,000 each by the FCC. They were located in Florida, California, Missouri, Texas, Louisiana, Washington, Colorado and Michigan. In addition, several firms were fined \$7,000 each for marketing uncertified personal computers and radiofrequency devices ...and selling unauthorized UHF modulators and transmitters which transmitted on TV channels 14 to 26.

## FCC CHARGES INTENTIONAL INTERFERENCE

The New Orleans FCC Field Office has cited four amateurs for "...willfully and maliciously causing interference to other operations in the amateur radio service in violation of Section 97.101(d)." Charged are **Vernon A. Paroli, KA5OWW**, New Orleans, LA; **John B. Genovese, WB5LOW**, Slidell, LA; **Will T. Blanton, Jr., N5ROC**, Carriere, MS, and **Joseph F. Richard, III, N5JNX**, of New Orleans. The FCC believes they each should pay a \$2,000 fine. It could have been \$7,000.

The FCC says Paroli deliberately jammed other amateur operators on 146.85 and 146.76 MHz on the evening of April 12, 1993, "...to degrade, obstruct or repeatedly interrupt radio communications." Paroli responded to the *Official Notice of Violation* by saying he believed the transcripts were inaccurate and misleading.

Genovese argued in his June 22nd response that "...my signal [on April 12] was somehow linked over to two meters [147.27 MHz] from two twenty" and that "...station K5OZ never recognized my signal. I had no way of knowing I was transmitting over any ham."

Blanton is accused of interfering with other amateur stations on the evenings of March 19 and April 2, 1993, on 147.27 and 145.43 MHz. Mr. Blanton says he was not in violation of the rules and that he has now taken action to prevent any further difficulties.

Joe Richard never responded to the charge that he was interfering with stations on 146.85 and 146.76 MHz. on the evening of April 12th. A subsequent FCC "warning" sent certified mail was returned "unclaimed" from the post office.

In any event, the FCC didn't buy any of the excuses and monitoring transcripts clearly show that these stations were intentionally jamming other stations ...sometimes even following them to new frequencies to continue the disruption.

The Commission's 1993 *Policy Statement for Assessing Forfeitures* calls for \$7,000 fines in these situations. "Because of the Commission's policy of reducing the amount in forfeitures issued to individuals, and in view of the fact that these are first forfeitures, we are reducing this amount to \$2,000," FCC said in the September 10th NAL's. "No further adjustments appear warranted."

Each amateur was ordered to pay the full \$2,000 to the FCC in Chicago within 30 days "...or file a written response specifying facts and circumstances warranting a reduction in the amount of the forfeiture, or discontinuance of forfeiture proceedings."

*(Excerpted from four Notices of Apparent Liability for Monetary Forfeiture, issued by Federal Communications Commission, Field Operations Bureau, New Orleans, Louisiana)*



## HAM PRANK: TALKING TO McDONALD'S COSTLY!

What Terry Van Sickle, WB5WXI of Dallas, TX, may have thought was a funny joke - could cost him his ham ticket - or worse! It has already apparently cost him his job.

Van Sickle and possibly a friend supposedly talked to customers ordering food at a local McDonald's drive-up menu board. They wanted burgers, but got an earful of what a Dallas newspaper called "...rude and racially offensive remarks" instead. The restaurant manager told complaining customers he had no idea what was going on and that his employees were certainly not responsible for the offensive remarks. He also called the FBI.

It all came to a climax on August 22nd at 1:00 a.m. in the wee hours of the morning when the FBI found Van Sickle parked near the restaurant surrounded by a car full of sophisticated radio equipment. Van Sickle works at night as a video photographer for the local ABC television outlet, WFAA-TV Channel 8. Or least he did.

He is known in professional journalism circles as "Dr. Death" because of his years of success prowling Dallas streets in search of news ...much of it very gruesome and dangerous. Van Sickle covers the "murder and mayhem" shift between 11:00 p.m. and 7:00 a.m. He films fires, car wrecks, shootings, disturbances, homicides... anything of news value that takes place on Dallas streets after dark. Thanks to a host of pre-set radio scanners, he usually is on scene interviewing witnesses before the police.

The FBI released him after about three hours of questioning on the most recent incident at McDonald's. Undoubtedly identified by his seven car antennas Van Sickle, the FBI found him parked across the street at another fast food restaurant parking lot. No charges have yet been filed against Van Sickle, but the TV station ordered him to turn in his video equipment.

A Dallas newspaper article quoted Van Sickle as denying that he did anything wrong. He did say, however, talking to fast food restaurants is "...a common little fun thing of electronic enthusiasts." He told how electronics buffs regularly post the frequencies and PL access tones of fast-food restaurant radio systems to computer users' bulletin boards - and that the McDonald's 154.6 MHz frequency (located right above the two meter ham band) is readily accessible to anyone. McDonald's reportedly uses two PL tones on a single frequency: one to talk employee-to-employee, another to talk employee-to-the-menu. "If you wanted to talk to McDonald's, you could go out tomorrow and spend \$300, buy an amateur radio, clip two wires, dial up a McDonald's, and talk to them. I would dare say that 50 percent of the ham radio operators out there have

made a comment to McDonald's," the newspaper article quoted Van Sickle as saying.

We spoke to Van Sickle a few days ago. He told us that the FBI was particularly concerned about his frequency lists which included all municipal and FBI channels. Although the FBI has not charged him with a crime, they did seize his car and radio equipment. "They allowed me to only take the TV camera and that was it."

Initially Van Sickle was to have been charged with "...obscenity involving telecommunications," a felony since one of McDonald's employees reportedly heard the "f-word" used. The charge may now be reduced to "...malicious interference."

In any event, the FBI found radio equipment - both commercial and amateur - in his car that was capable of transmitting on 154.6 MHz. In addition to the car, they confiscated his radio arsenal consisting of three hand-held trunking radios, a four band hand-held amateur radio, a pocket scanner, a Motorola VHF Spectra, a Motorola 800-MHz Spectra, a Motorola Max-Trax, a Radio Shack scanner, a CB radio and a Mid-land VHF 2-way commercial transceiver. The FCC was also called in and has inspected the car. Although the FBI had an electronic technician with them, there is no indication that any federal official has actually monitored the transmissions.

"It has cost me my career. I have essentially been shunned by the TV station that I work for. They are up for license renewal this year and I have been suspended without pay," he said. "My little world has pretty much come to an end," Van Sickle said sadly.

The most damaging evidence against him is that Terry had a ham friend with him. "The FBI separated us and kept us out there for three hours, ...hot, windows rolled up, no air conditioning... My buddy (whom Van Sickle would not identify) was double-teamed by two agents and he eventually 'rolled over' and gave them an incriminating written statement admitting that we had made a couple of 'no big deal' transmissions to McDonald's. He implicated himself as well as me. His job situation is such that a phone call from the FBI could end his career in a heartbeat. He has a clearance."

"I am going to end up 'going down' for something over the situation ...probably malicious interference. They want forfeiture of all my radio equipment ...and my laptop. I could lose \$12,000 to \$15,000 worth of radio equipment and all the tools of my trade."

Feeling remorseful, Terry told us "Just looking at it overall, a few moments of fun out there can be disastrous. Nobody thinks about the FBI coming along and just cleaning you out. If I was absolved of everything tomorrow, it would still probably cost me my career because of the publicity it has received."